CHARACTERIZATION OF TREATED-BLACK DIAMONDS

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Abstract

In the given work samples of faceted diamonds, diamond crystals and plates which were treated to change their color to black were investigated. The technique of diamond blackening is patented in Russia however detailed research of samples that were treated in such a way was not carried out till last time. Features of this technique are not disclosed, it is only known that samples are treated at low P-T-parameters. Using of non gem (boart quality) or near gem (with numerous inclusions and cracks) diamonds for this kind of treatment gives the best result. According to the manufacturer, gem diamonds of high quality (free of inclusions) are not suitable for this blackening technology. Black color in diamonds may be produced by irradiation [1] or by heating to produce internal graphitization and by some other methods [2].

The study of the blackened diamond samples was carried out by the means of standard gemological equipment (optical microscopy, diamond&moissanite tester, UV-luminescence lamp, magnet) and laboratory research methods: absorption and reflectance spectroscopy in UV-VIS-IR-range (at room temperature), spectral cathodoluminescence (77K), color cathodoluminescence and electron microscopy.

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